Space Weather Forecast

Issued on Friday, 28 October 2022 at 13:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor geomagnetic storms throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Low, with several very low level C-class flares. There are five numbered and one unnumbered sunspot regions on the visible disk. All have a simple magnetic structure. AR3130 and AR3133 have potential to develop into something more significant and these regions will be monitored as they cross the disk. Though 3133 appears to have decreased in size with the earlier possibility of a delta configuration now looking less likely. The largest region on the visible disc remains AR3131 Cho/Beta also in the northwest, which is stable with a simple magnetic configuration. Newly numbered AR3134 and the unnumbered region in the SW are very weak looking Beta/Bxo groups. No Earth-directed CMEs have been observed.

Solar Wind / Geomagnetic Activity: The solar wind has fluctuated between background and slightly-elevated levels, probably due to a weak coronal hole connection. The density was average or slightly above average. Total IMF strength was generally weak. The north-south component, Bz, varied between 5nT and -7nT, and was often weakly negative (southward) direction. Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low with a slight chance (10%) of Moderate class flares. However, new regions may rotate onto the visible disc through the period, increasing the chance of significant flares.

Solar Wind / Geomagnetic Activity: Solar wind enhancements are expected at times throughout the period from two coronal hole features, with a weak enhancement initially in place from CH36/+. A more notable HSS is then expected from CH37/+, later day 2 (29th) and into day 3 (30th), with slightly elevated or elevated winds persisting until the end of the period (31st). Quiet to Unsettled geomagnetic activity at first, with a chance of isolated Active intervals. Then from late day 2 (29th) mainly Unsettled to Active activity is expected, with a chance of a Minor geomagnetic storm.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	40	40	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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